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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/525,142	03/14/2000	Pablo Tamayo	2825.1014-001	8330

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HAMILTON, BROOK, SMITH & REYNOLDS, P.C.  
530 VIRGINIA ROAD  
P.O. BOX 9133  
CONCORD, MA 01742-9133

EXAMINER

ZHOU, SHUBO

ART UNIT PAPER NUMBER

1631

DATE MAILED: 05/22/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/525,142

Applicant(s)

TAMAYO ET AL.

Examiner

Shubo "Joe" Zhou

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 February 2002.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☒ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

Applicants' request for a Continued Prosecution Application (CPA), filed 2/26/02, under 37 CFR 1.53(d) based on prior patent Application No. 09/525,142, is accepted and a CPA has been established. An action on the CPA follows.

Applicants' arguments/amendments in Paper No. 14, filed 1/31/02, and the declaration under 37 CFR 1.131, have been entered and fully considered. Rejections and/or objections not reiterated from previous Office actions are hereby withdrawn. The following rejections and/or objections are either reiterated from previous Office actions and maintained or newly applied. They constitute the complete set presently being applied to the instant application.

### ***Specification***

The specification is objected to because of the following:

The disclosure is objected to also because it contains an embedded hyperlink and/or other form or browser-executable code. Such code is present in the specification at page 21, 24, and elsewhere. Applicants are required to delete the embedded hyperlink and/or other form of browser-executable code. See MPEP ' 608.01. Applicants are reminded that some codes are browser-executable even without containing http://.

Appropriate correction is required.

***Claim Objections, Warning***

Applicants are advised that should claims 5-10 be found allowable, claims 13-18, respectively, will be objected to under 37 CFR 1.75 as being substantial duplicates thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k). In the instant case, claims 5-13 and 13-18 are duplicates, respectively, because they comprise the same method steps.

***Claim Rejections-35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

**(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.**

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mack, David H. (US patent no. 6,303,301, date of patent: 10/16/01, filed 5/29/1998), in view of Mangiameli et al. (European J. Operational Research, September 1996, Vol. 93, pages 402-417, see Abstract. This reference was provided to applicants in the previous Office actions) and Kohonen (IDS document: Self-Organizing Maps, Publisher: Springer, 1997).

Mack discloses methods of cluster analysis for gene expression monitoring.

In regard to claim 1, Mack's methods comprise receiving gene expression values of the datapoints, clustering the datapoints, and providing output display indicating the clusters of the datapoints (see Figs 2, 9A and 9B, columns 2, 27-28). With respect to the limitation of using self organizing maps in cluster analysis of the instant claims (especially in regard to claims 6-7 and 14-15), while Mack does not explicitly disclose clustering using self organizing map (SOM), he does motivate/suggest using alternative statistical methods (see columns 27-28). Mangiameli et al. applied SOM and seven hierarchical methods to 252 messy data sets with real-world data imperfections such as dispersion, irrelevant variables, outliers, and nonuniform densities and found that self organizing map is significantly superior in both robustness and accuracy to other clustering methods (see Abstract), thus motivating using SOM in place of hierarchical clustering analysis. Kohonen, as the inventor of SOM, teaches every aspect of self organizing maps including mathematical preliminaries, justification of neural modeling, variants of self organizing maps, learning vector quantization, the basic self organizing

maps, applications, hardware for self organizing maps, and self organizing maps literature review.

In regard to claim 2, the gene expression values are obtained from a gene that is subjected to at least one condition, such as chemical and irradiation treatment (columns 4 and 27).

In regard to claim 3, the step of receiving includes receiving gene expression values of datasets across multiple genes for a condition, such as detection of expression of multiple genes using oligonucleotide array (columns 13-28).

In regard to claim 4, Mack's methods comprising filtering out datapoints to identify genes whose expression is significantly altered (column 2).

In regard to claims 5, 9, 13, and 17, Mack's methods comprise normalizing the value of gene expression using a ratio of the signal for the test samples over the signal of the control probes (see column 17). It would have been well known to an ordinary skill in the art that standard deviation would be used in statistical analysis such as cluster analysis for normalization.

In regard to claims 8 and 16, it would have been obvious to an ordinary person in the art that the amount of outputting/displaying results would vary on the specific needs of individuals. One or more representatives from each cluster could be displayed.

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In regard to claims 10 and 18, it would have been well known in the art that rescaling would often be necessary in a statistical analysis in order to accommodate the vast degree of difference in datasets.

In regard to claims 11 and 12, all the method steps and limitations have been set forth above.

Thus, one of ordinary skill in the art would have been motivated to modify the method of Mack to use SOM as suggested and taught by Mangiameli et al. and Kohonen for the cluster analysis of gene expression data to achieve its superiority in accuracy and robustness. There would have been a reasonable expectation of success because Kohonen teaches the details of SOM.

### **Conclusion**

No claim is allowed.

Papers related to this application may be submitted to Technical Center 1600 by facsimile transmission. Papers should be faxed to Technical Center 1600 via the PTO Fax Center located in Crystal Mall 1. The faxing of such papers must conform with the notices published in the Official Gazette, 1096 OG 30 (November 15, 1988), 1156 OG 61 (November 16, 1993), and 1157 OG 94 (December 28, 1993)(See 37 CFR § 1.6(d)). The CM1 Fax Center number is either (703) 308-4242 or (703)305-3014.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to:

Shubo "Joe" Zhou, Ph.D., whose telephone number is (703) 605-1158. The examiner can normally be reached on Monday-Friday from 8 A.M. to 4 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Woodward, Ph.D., can be reached on (703) 308-4028.

Any inquiry of a general nature or relating to the status of this application should be directed to Patent Analyst Tina Plunkett whose telephone number is 703-305-3524, or to the Technical Center receptionist whose telephone number is (703) 308-0196.

S. "Joe" Zhou, Ph.D.  
Patent Examiner



MICHAEL BORIN, PH.D  
PRIMARY EXAMINER

